OUTDOOR INDIANA

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The Photographs

As our cover shows, roasted marshmallows are common treats around October campfires. On Page 2, Randy Shedd caught an early fall frost on an oak leaf. Camera buffs travel to Brown County for photos such as the one seen in our centerspread. Mike Kirk found one of Indiana's white-tailed deer for the back cover.

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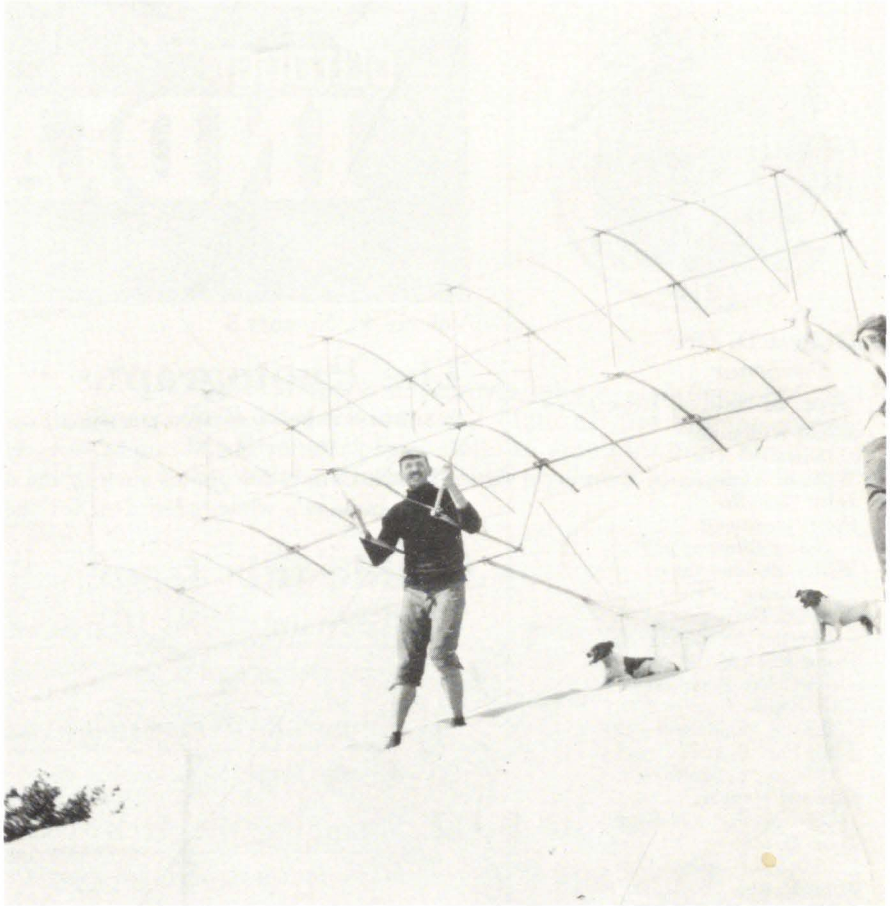
INDIANA COLLECTION
BIOGRAPHY
(CHANUTE, OCTAVE)

BIRD MEN
OF THE DUNES



Augustus Herring prepares to fly a Chanute glider in 1896.

By David Lester

Northeast of the Lake Street bridge of the Gary suburb of Miller, a small plaque marks the site where a band of birdmen sought to conquer the skies over the Indiana dunes. During the summer of 1896, this group made more than a thousand flights, developed the world's first inherently stable glider and designed the model upon which the first successfully powered airplanes were built.

On the sloping dunes above Lake Michigan, Octave Chanute, one of the pioneers of aviation, performed his experiments with gliders. With his small group of co-workers, Chanute sought to solve the problems of human flight. His discoveries led another birdman to success: Hoosier-born Wilbur Wright.

Born in Paris in 1832, Chanute came with his family to America at the age of seven. By the time he was 21, he had become the division engineer for the Hudson River Railroad in New York. As the railroad moved west at mid-century, Chanute became a successful and ingenious construction engineer. His fertile mind designed the famed Chicago Union Stockyards and the elevated train system in New York City. Perhaps his greatest engineering achievement was the design and construction of the railroad bridge across the Missouri River at Kansas City in 1869. In 1889, Chanute retired and moved to Chicago.

It was here that his attention turned to a subject that had been of special interest to him for 15 years: human flight. He had been gathering all of the material available on the theories of the Englishman Francis Wenham, who stressed the need for developing a systematic approach to the problem, and Otto Lilienthal, a German who had been experimenting with flying gliders from a man-made hill in Germany. Chanute collected and studied every bit of information that he could find, and in 1894 published *Progress in Flying Machines*, the first book published that contained a reasonable analysis of aviation experiments.

After publishing his book, Chanute felt compelled to experiment with gliders of his own design, based upon the information he had accumulated and his own ideas. Initially, he did not set out to design a machine that would fly farther than any other had flown, but sought to develop a machine that would be stable in flight; he reasoned that, until such a machine was developed, and safety therefore secured, any attempt at sustained powered flight would be premature.

At this time, in 1896, the most significant glider experiments were being conducted in Germany by Lilienthal. Lilienthal's machines were graceful structures of bamboo and fabric, and he constructed both monoplane and biplane gliders. Both operated on the same fundamental principles. The pilot stood on the middle of the apparatus, thrusting his arms through the padded openings so that he hung suspended in flight. He maintained balance and control of the craft in flight by moving his body and swinging his legs back and forth as the flight progressed. Using only this system as a means of control, Lilienthal made hun-

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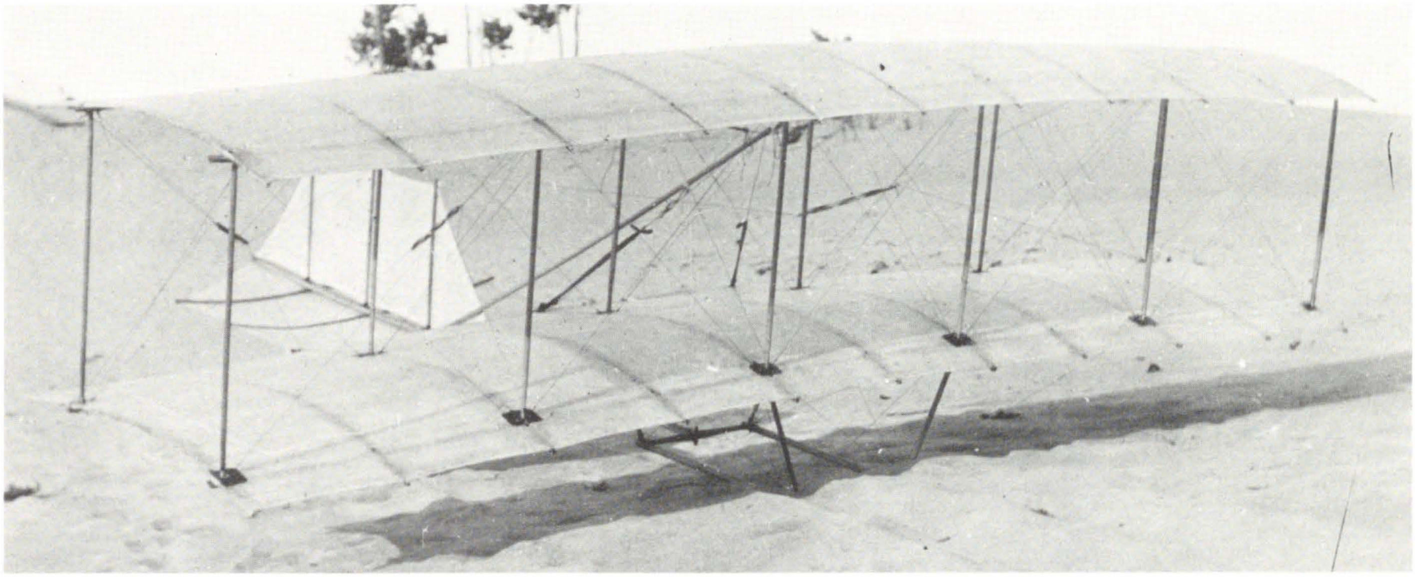
Wright-Patterson Museum

Three Chanute assistants take a well-deserved rest (left) after a successful flight off the Indiana dunes. The Chanute glider (below) was strikingly similar to the Wright brothers' first powered aircraft.



dreds of flights, until a sudden gust of wind caught the glider he was flying and, unable to control the machine, Lilienthal plunged fifty feet to his death.

Chanute sought to overcome this problem of balance and to discover a better means of control than that of shifting the weight of the pilot.

On June 22, 1896, Chanute arrived at Miller Beach with his party to begin his experiments. He selected this location because the high sand dunes offered a starting point for his gliders and because the soft sand offered maximum safety for his pilots. His party consisted of Augustus M. Herring, a young aeronautical engineer who had been associated with Samuel P. Langley at the Smithsonian Institution; Paul Butusov, a young Russian aeronautical enthusiast; William Avery, a carpenter; and Dr. James Ricketts, who also served as camp cook.

The group brought two gliders with them: a Lilienthal-type glider constructed and modified by Herring, and a multi-wing machine designed by Chanute. Since Chanute was past 60 years old, he left the actual testing to the younger members. The site they had selected was ideal, for the dunes in that area were about 70 feet high and there was always a steady breeze blowing off the lake. The pilots, who were suspended from the wing of the Lilienthal machine and beneath the wing of Chanute's glider, would make running starts of several steps, then launch themselves into the wind from the top of the dune. In this manner a hundred flights were made, the longest being 116 feet with the Lilienthal machine. Chanute found the German's glider dangerous and hard to handle, even in a light wind, and soon the flights were suspended.

Chanute's glider, the wings of which could be pivoted fore and aft, proved to be the more stable, even though its five tiers of wings were ungainly and offered great resistance to the wind. Its longest flight was 82 feet, but Chanute was pleased with its performance.

The first series of tests were conducted July 4 and the party returned to Chicago. Chanute, Herring and Butusov spent the next several weeks constructing new gliders which incorporated the principles learned during the tests. They returned to Dunes Park, Ind., Aug. 20, 1896, hoping to avoid public interference.

Chanute tested three machines at Dunes Park: his multi-wing glider, a monoplane designed by Butusov and a three-wing glider. The three-wing glider was designed by Chanute, with the exception of an automatic device designed by Herring that operated the rudder to secure stability.

The multi-wing glider and monoplane

soon proved a disappointment to the group, although several dozen flights were made with each machine without incident. The three-wing glider, however, proved a remarkable success.

The first trials with the glider showed that the lower wing was too close to the ground. It was removed and the glider became a biplane. Hundreds of flights were made with the machine, ranging from 199 feet to 359 feet. Glides were made in winds as high as 30 miles per hour and altitudes as high as 62 feet were recorded without incident. Often flights that started high on the dunes ended with both pilot and machine landing in Lake Michigan. Such confidence was acquired with the glider that all in the party, and even several spectators, were permitted to fly it. Chanute believed he was approaching the solution to the problem of stability; however, he did not consider the biplane sufficiently stable or airworthy to justify an attempt to fit it with an engine and make powered flights.

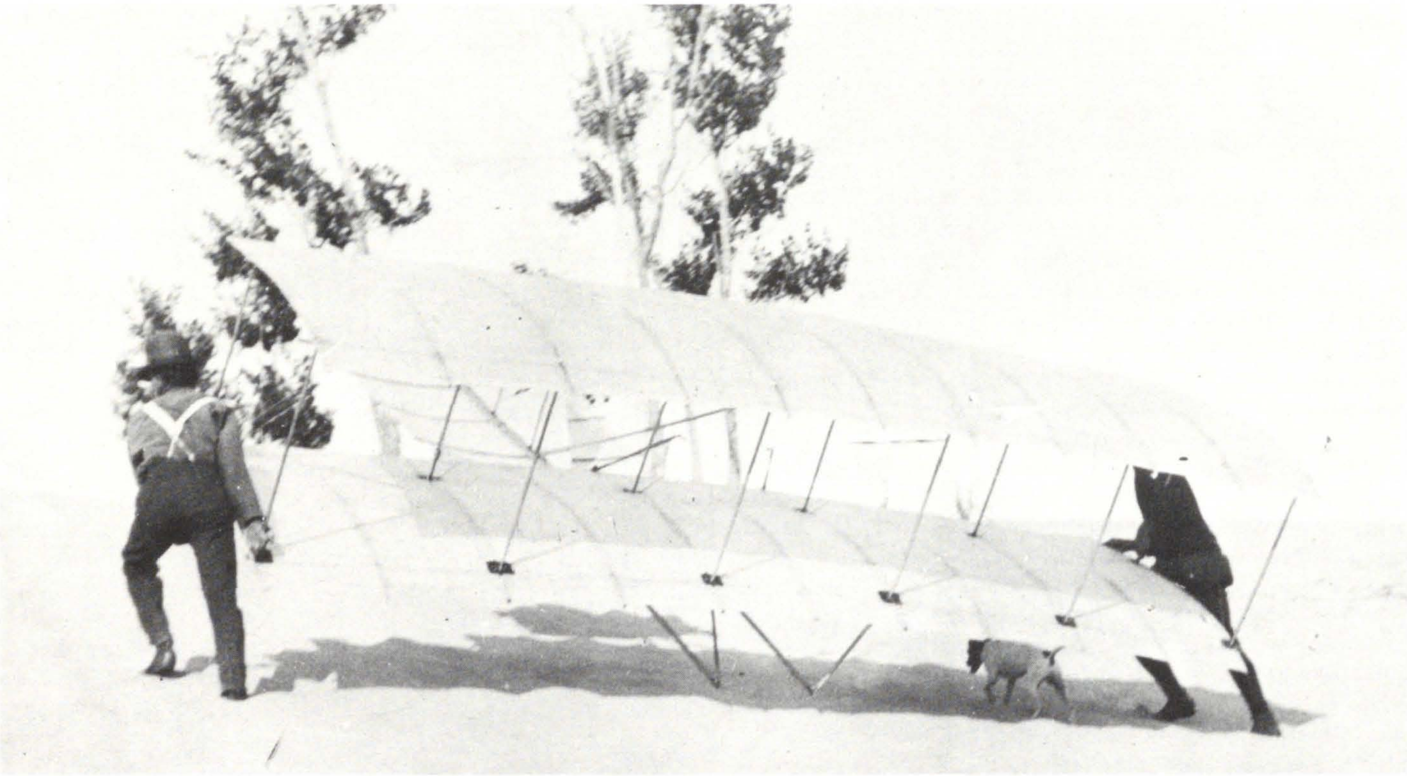
The biplane glider, as developed by Chanute and Herring, proved to be the model upon which the first successful powered airplanes were built. While they did not invent the biplane, they were the first to apply the principles of the modern truss bridge to glider construction to allow the machine to be strong, yet incredibly light. It was constructed from spruce, braced with light cable and covered with cotton fabric. The glider had a wing span of slightly more than 16 feet and weighed 23 pounds, yet it was capable of carrying a maximum weight of 178 pounds.

The biplane glider, as developed by Chanute and Herring, proved to be the model upon which the first successful powered airplanes were built.

Chanute concluded his experiments at Dunes Park, satisfied that he had made a major advancement in the quest for flight. As always, he made his findings available to anyone who asked. In May 1900, he received the first of numerous letters from Wilbur Wright seeking information. It began a 10-year correspondence between the two great aviation pioneers. In his first letter, Wright revealed his ideas and ambitions regarding flight. Chanute made available all of the information that he had gathered, and throughout their correspondence he encouraged the brothers in their efforts. On several occasions, this encouragement was the only force that caused the Wrights to continue.

Shortly after Chanute's death in 1910, Wilbur Wright, in a letter published in the *Aeronautical Journal,* paid tribute to his friend and reminded the world of the important discoveries made on the Indiana dunes:

> *Mr. Chanute was one of six very remarkable men who in the last decade of the 19th century raised studies related to flying to a point never before attained. Mr. Chanute's book,* Progress in Flying Machines, *was one of the greatest contributions ever made to the advancement of the art. His Dunes Park experiments, in combination with the clear manner in which they were presented to the public, constituted another very important contribution, and finally his encouragement of workers in all countries vastly influenced the trend of events accompanying the birth of the art.*



Wright-Patterson Museum

Chanute and his assistants made hundreds of test flights from the southern shores of Lake Michigan.